REMARKS

I.   Introduction

In response to the Office Action dated November 3, 2005, claims 2, 8, 9, 13, 19, 20, 24, 30, 35, 41, and 42 have been cancelled, and claims 1, 10, 11, 12, 21, 22, 23, 32, 33, 34, 43, and 44 have been amended. Claims 1, 3-7, 10-12, 14-18, 21-23, 25-29, 31-34, 36-40, and 43-44 remain in the application. Re-examination and re-consideration of the application, as amended, is requested.

II.   Request for Information

In response to the request for information, Applicants submit the enclosed declaration. Applicants note that the white paper cited by the Examiner is the same white paper found by the declarant, Steven Guttman, pursuant to his investigation. In addition, Applicants note that U.S. Patent No. 6,118,931 was cited in the present specification and is provided herein as part of the request for information. Applicants submit that this response is fully compliant with the request for information.

III.   Objections to the Specification

Applicants have amended the specification to overcome the objections and submit that the objections are now moot.

IV.   Non-Art Rejections

In paragraphs (9) of the Office Action, claims 1-11, 20-22, 31-33, and 42-44 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

Applicants have the claims to overcome these rejections and submit that the rejections are now moot.

V.   Prior Art Rejections

In paragraphs (15)-(16) of the Office Action, claims 1, 3-8, 12, 14-19, 23, 25-30, 34, and 36-41 were rejected under 35 U.S.C. §103(a) as being obvious over Stoppani, Jr., U.S. Patent No. 5,287,500 (Stoppani) in view of "Operating Systems Internals and Design Principles," by William

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Stallings (Stallings) and "Microsoft Computer Dictionary," (MSCD) being provided as extrinsic evidence. In paragraph (17) of the Office Action, claims 2, 9-11, 13, 20-22, 24, 31-33, 35, and 42-44 were rejected under 35 U.S.C. §103(a) as being obvious over Stoppani in view of Stallings and MSCD being provided as extrinsic evidence as applied to claims 1, 3-8, 12, 14-19, 23, 25-30, 34, and 36-41 and further in view of Bopardikar et al., U.S. Patent No. 6,404,975 (Bopardikar).

Specifically, the independent claims were rejected as follows:

Claim 1

It is noted that in claim 1 the Applicant recites "means", however this is not being taken as Applicant's invoking of 112, sixth paragraph (means plus function), since the applicant did not recite "means for".

Stoppani, Jr. discloses a data processing apparatus, comprising:

data storage means having a plurality of defined storage elements (Fig. 1, Items 106, 108 and 110; Col. 2, Lines 29-30),

data storage means containing usage data indicating which of said storage elements contains data (Fig. 6; Col. 6, Lines 19-24), and

processing means (Fig. 1, Item 124) configured to update said usage data in response to data being stored within said data storage means (Col. 6, Lines 19-24), wherein

said memory means (Fig. 1, Item 112; Col. 2, Lines 30-31) further contains a datastore (Fig. 6, Item 240; Col. 6, Lines 25-28), and said processing means is configured to:

analyse said usage data to determine the number of said storage elements not containing data (Col. 6, Lines 35-43);

store information within said datastore indicating said number of storage elements not containing data (Col. 6; Lines 38-43); and

read information from said data storage means to determine whether said further data may be stored (Fig. 4, Step 186; Col 6, Lines 44-47).

In the reference to the data storage means of the prior art, it is not stated explicitly that the disk drives have a plurality of defined storage elements however, a plurality of storage elements are inherent to any disk.

Stoppani, Jr. discloses that the data storage means contains the usage data and not the memory means as is required by the claim.

Claims 12 and 14-19

Claim 12 discloses a method of storing data comprising the steps of storing usage data, analyzing the usage data to determine the amount of free space, storing the amount of free space and reading the amount of free space to determine if more data can be stored. This method is the same as that which the system of claim 1 is configured to perform. Therefore, claims 12 and 14-19 are rejected under the same arguments as for claims 1 and 3-8.

Claims 23 and 25-30

Claim 23 discloses a computer-readable medium having computer-readable instructions executable by a computer such that, when executing said instructions, a computer will perform the steps of storing data comprising the steps of storing usage data, analyzing the usage data to determine the amount of free space, storing the amount of free space and reading the amount of free space to determine if more data can be stored. This computer program performs the same method as that which the system of claim 1 is configured to perform. Since the system of the prior art used to reject claims 1 and 3-8 is able to perform these steps and since a hardware system cannot perform any task without having the software to instruct it do so, the system in the prior art must have software to

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enable these steps to be carried out. Therefore, claims 23 and 25-30 are rejected under the same arguments as for claims 1 and 3-8.

Claims 34 and 36-41

Claim 34 discloses a computer system programmed to execute stored instructions such that in response to said instructions said system is configured to perform the steps of storing data comprising the steps of storing usage data, analyzing the usage data to determine the amount of free space, storing the amount of free space and reading the amount of free space to determine if more data can be stored. This computer system performs the same method as that which the system of claims 1 and 3-8 is configured to perform. Since the prior art used to reject claims 1 and 3-8 is able to perform these steps, the system in the prior art must be programmed to execute these steps. Therefore, claims 34 and 36-41 are rejected under the same arguments as for claims 1 and 3-8.

Applicants traverse the above rejections for one or more of the following reasons:

(1)   Stoppani, Stallings, MSCD, and Bopardikar do not teach, disclose or suggest using a separate cache to store usage information for different partitions on a RAID system; and

(2)   Stoppani, Stallings, MSCD, and Bopardikar do not teach, disclose or suggest storing information in cache that identifies a predetermined frame definition/size for each separate partition and a number of storage elements in each separate partition not containing image data.

Independent claims 1, 12, 23, and 34 are generally directed to a method for determining the amount of free storage space in a RAID system. Namely, a RAID system has a plurality of defined storage elements with each storage element being a separate partition of the RAID. Each separate partition/storage element accepts image data for image frames of a predetermined frame definition/size. The issues arises as to determining whether sufficient space exists in a particular partition to store a clip or frame data. To provide such capabilities, the invention utilizes multiple datastores that are each configured to storage usage data. The usage data in each datastore indicates which defined storage element/partition contains image data of the predetermined frame definition/size. The usage data is updated whenever image data is stored in the RAID system. The usage data is analyzed to determine the number of storage elements not containing image data (i.e., for each partition/predetermined frame definition/size). Information is then stored in each of the datastore. Such stored information identifies the predetermined frame definition/size for each separate partition, and indicates the number of storage elements in each separate partition that does not contain image data. The information in the datstore may then be read to determine if further image data can be stored in the RAID system.

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The cited references do not teach nor suggest these various elements of Applicants' independent claims. Firstly, the Office Action admits that Stoppani fails to teach usage data in memory means. In addition, the Office Action admits that both Stoppani and Stallings fail to disclose data storage comprising a RAID (instead relying on Bopardikar).

The Office Action also states that Applicants do not give any reasoning to show that their system would not operate in the manner disclosed if the data stored in the system was not image data. Applicants respectfully disagree. Paragraphs [0004] and [0005] of the present specification detail problems of the prior art:

[0004]   Data processing systems for editing and manipulating large amounts of data, for example image clips, have been known for a number of years. Such systems contain large data storage devices, typically in the form of a RAID (redundant array of independent disks).

[0005]   A particular piece of data may be very large, for example a clip which is to be used in an editing process may comprise many megabytes of data. Therefore, if an attempt is made to load such data onto a RAID, and the available storage space on the RAID is insufficient, processing time and operator time is wasted. It is therefore known for systems to have a process for measuring the available storage space before the storage process is commenced. However, such measuring processes themselves require a substantial processing effort, and the corresponding processing time can impact on the workflow of the human operator.

As can be seen from this text, image data often contain large amounts of data and therefore, standard disks would not be suitable.

The amended provide a unique combination and a specific manner for utilizing the cache and datastores and the summary information in a RAID system. The Action relies on Bopardikar to teach a RAID system. Applicants note that while Bopardikar describes the use of a RAID system, the manner in which the cache and the information is summarized into the cache is not taught, disclosed, or remotely alluded to in Bopardikar. Specifically, Bopardikar fails to illustrate information that not only identifies a predetermined frame definition/size for each partition in the RAID system, but also indicates the number of free storage elements in each separate partition.

In rejecting the multiple cache aspects of the prior dependent claims, the Office Action combines Stoppani, Stallings, and Bopardikar. Namely, the Office Action relies on both Stoppani and Stallings for allegedly teaching a plurality of caches. However, as claimed the plurality datastores reflect specific pieces of information that is not taught by the prior art cited. For example, neither Stoppani nor Stallings mention a RAID system or different partitions. Accordingly, it would be impossible for information to be stored in the cache that identifies such a predetermined frame definition/size for each separate partition.

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Rather than describing such a predetermined size and a number of free spaces in such a size, Stoppani merely describe a number of free clusters that remains on a device (see col. 6, lines 38-43). Such a teaching completely fails to describe how many free clusters remain on a device in a particular size or the claimed invention relating to a number of storage elements in a partition that does not contain image data, wherein such storage elements/partitions are for particular predetermined frame definitions/sizes. Again, the text of Stoppani fails to not only describe the different partitions and sizes allocated amongst partitions, but also fails to teach the summarization of data based on the information within the partitions.

Stallings further fails to cure Stoppani's deficiencies. Similar to Stoppani, Stalling merely describes a file system that uses bit tables to maintain auxiliary data structures that summarize the contents of subranges of the bit table. The table is divided into a number of equal-size subranges and for each subrange, the table provides the number of free blocks and the maximum size contiguous number of free blocks. Stallings system further requires a scan of the table to find an appropriate subrange and a search of the subrange. Such a teaching completely fails to provide for multiple bit tables and the summary of multiple bit tables that are stored in memory. The present claims provide for multiple datastores having usage data (with the dependent claims identifying each usage data as consisting of a bitmap). In this regard, Stallings summary table is not even close to that set forth in the present claims.

The Office Action may attempt to assert that the Applicant cannot attack the references individually. However, while Applicants agree that one cannot show non-obviousness by attacking references individually where the rejections are based on combinations of references, the claimed invention must also be examined as a whole and whether the "whole" claimed invention would have been obvious at the time of invention (see MPEP §2142). When examining the present whole invention, it is clear that the prior art fails to teach, disclose, or suggest the use of a RAID system with multiple partitions in combination with a datastore to indicate not only the predetermined frame definition/size for each partition, but the number of storage elements in each separate partition that does not contain image data.

In view of the above, Applicants submit that neither the cited references alone, nor the combination of the cited references would result in the present invention. Specifically, the combination would not teach the ability to summarize the multiple caches and providing the

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predetermined frame definition/size for each separate partition along with the number of storage elements as claimed. Instead, the RAID system of Bopardikar would be combined with a system that indicates an overall number of free blocks. Such a system would not summarize the data on a per/partition per/predetermined frame definition/size basis.

Moreover, the various elements of Applicants' claimed invention together provide operational advantages over Stoppani, Stallings, MSCD, and Bopardikar. In addition, Applicants' invention solves problems not recognized by Stoppani, Stallings, MSCD, and Bopardikar.

Thus, Applicants submit that independent claims 1, 12, 23, and 34 are allowable over Stoppani, Stallings, MSCD, and Bopardikar. Further, the dependent claims are submitted to be allowable over Stoppani, Stallings, MSCD, and Bopardikar in the same manner, because they are dependent on independent claims 1, 12, 23, and 34, respectively, and thus contain all the limitations of the independent claims. In addition, the dependent claims recite additional novel elements not shown by Stoppani, Stallings, MSCD, and Bopardikar.
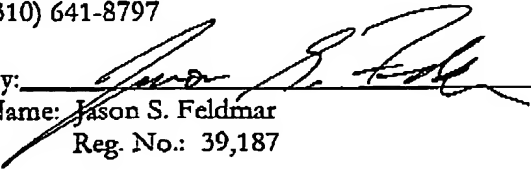
VI.   Conclusion

In view of the above, it is submitted that this application is now in good order for allowance and such allowance is respectfully solicited. Should the Examiner believe minor matters still remain that can be resolved in a telephone interview, the Examiner is urged to call Applicants' undersigned attorney.

Respectfully submitted,

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